

**REMARKS**

The Final Office Action mailed July 20, 2009, has been received and reviewed. Claims 1 through 4 and 6 through 36 are currently pending in the application. Claims 1 through 4 and 6 through 36 stand rejected. Applicant has canceled claim 22, amended claims 1 through 4, 7, 11, 12, 14, 15, 19, 21, 23, 27-32 and 34, and added new claims 36 and 37, and respectfully requests reconsideration of the application as proposed to be amended herein.

No new matter has been added, the amendments to the claims being responsive to the observations made by the Examiner and to more precisely claim the present invention. New claims 36 and 37 are identical to present claims 17 and 25, and have been added for consistency of claim coverage among the respective four (4) claim sets.

Applicant wishes to thank the Examiner for his detailed Office Action and explanation of the manner in which the Examiner is interpreting the claims with respect to the prior art. Applicant has made a good faith effort to address the Examiner's concerns in the claim amendments made herein.

**New Power of Attorney**

The Examiner is respectfully advised that a new Power of Attorney to the Customer Number of undersigned counsel has been filed herewith, with the required Statement under 37 CFR 3.73(b). The Examiner is respectfully requested to direct all future communications relating to this application to the undersigned.

**Information Disclosure Statement**

Applicant has filed herewith an Information Disclosure Statement, and respectfully requests that the documents listed thereon and accompanying the Information Disclosure Statement be made of record herein.

**35 U.S.C. § 102 Anticipation Rejections****Anticipation Rejection Based on U.S. Patent No. 6,344,149 to Oles**

Claims 1, 2, 6 through 8, 10 through 12, 15 through 19, and 22 through 26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Oles (U.S. Patent No. 6,344,149). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Unless a single prior art reference describes “all of the limitations claimed” and “all of the limitations [are] arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.” *Net MoneyIN Inc. v. VeriSign Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). A single prior art reference must “clearly and unequivocally” describe the claimed invention “without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.” *Id.* at 19 (citing *In re Arkley*, 455 F.2d 586, 587 (C.C.P.A. 1972)).

As to claim 1 in its previous form and as amended herein, Applicant respectfully asserts that Oles does not, in fact, describe each and every element thereof. Applicant has carefully considered the Examiner’s interpretation of Oles in the Final Office Action and, while not agreeing with same, has amended claim 1 in the interest of advancing prosecution. Applicant has amended claim 1 to recite, in pertinent part, “[a] polycrystalline diamond ~~abrasive element layer having consisting of~~ a region rich in catalyzing material and ~~an annular~~ a region ~~lean in catalyzing material, the region lean in catalyzing material including an annular portion adjacent to and extending along~~ the peripheral surface ~~extending away from the working surface toward but~~ stopping short of the interface, the annular ~~region portion~~ or a substantial portion thereof being ~~located bounded~~ between at least a portion of the region rich in catalyzing material and the peripheral surface and being lean in catalyzing material.”

As noted in Applicant's prior response, in the referenced portions of Oles, there is no *annular* region lean in catalyzing material, and any region lean in catalyzing material extending from the rake surface 80 down the flank surface 82 extends *all the way* to the backing 62. See FIGS. 6 and 7, and Col. 7, lines 21 through 40. Applicant has amended claim 1 to use "consisting of" language with respect to the catalyst-lean and catalyst-rich regions of the claimed polycrystalline diamond layer, as suggested by the Examiner.

Applicant appreciates Exhibit A to the Office Action, wherein the Examiner has graphically indicated his interpretation of Oles. However, Applicant respectfully notes the FIG. 6, relied upon by the Examiner, is an intermediate product (FIG. 7 depicting the Oles end product) and does not, in fact truly depict the Oles intermediate structure. While FIG. 6 appears to show a gap (noted in Exhibit A) between the flank portion of the PCD blank 60 which has had the catalyst removed, Applicant notes that the drawing figure is a schematic (Col. 4, lines 11-17) whereas in fact there would be no such gap in a diamond table formed under a high pressure, high temperature process, as is the Oles structure (Col. 5, lines 23-26, referencing Hall et al. U.S. Patent 4,604,106). Further, Oles clearly states (Col. 7, lines 25-40) that there is a portion of the essentially catalyst-free exterior region 66 which extends along the *entire* rake surface 80 and another portion which extends along the *entire* flank surface 82. It is unequivocally stated in the same passage that the interior region 68 containing catalyst does not extend to the rake surface 80 or the flank surface 82.

Claim 2 is allowable as depending from claim 1. Claim 2 has been amended to recite that a portion of the catalyst-lean region is adjacent to the working surface.

Claim 6 is allowable as depending therefrom.

Claim 7 is allowable as depending from claim 1 and, further, as Oles does not appear to describe "wherein the region rich in catalyzing material comprises *a plurality of layers, which layers differ in average particle size or composition.*" (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claim 8 is allowable as depending from claim 1.

Claim 9 is allowable as depending from claim 1.

Claim 10 is allowable as depending from claim 1.

Claim 11 is allowable for reasons similar to those stated above with respect to claim 1. Again, the Oles reference as relied upon by the Examiner fails to describe “[a] polycrystalline diamond ~~abrasive element~~layer having consisting of at least one substantially annular region lean in catalyzing material, the at least one region being substantially annular in shape, adjacent the peripheral surface, commencing at a peripheral edge of the working surface and extending away from the working surface toward the interface but spaced therefrom, and at least another region of the polycrystalline diamond layer being rich in catalyzing material.”

Claim 12 is allowable as depending from claim 11.

Claim 15 is allowable as depending from claim 11 and, further, because Oles fails to describe “wherein the at least another region rich in catalyzing material itself comprises *a plurality of layers rich in catalyzing material, which layers rich in catalyzing material differ in at least one of average particle size and chemical composition.*” (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claims 16 through 18 are each allowable as depending from claim 11.

Claim 19 is allowable as Oles does not appear, for the reasons stated above with respect to claim 1, to describe “[a] polycrystalline diamond ~~abrasive element~~layer having consisting of a region lean in catalyzing material adjacent at least a portion of the working surface, lean in catalyzing material and a another, substantially annular region lean in catalyzing material adjacent the peripheral surface, contiguous with the region, extending away from the working surface toward the interface and spaced from the interface, and a region rich in catalyzing material in contact with the substrate along the interface and including a portion located between the another, substantially annular region lean in catalyzing material and the interface.”

Claim 22 has been canceled, rendering the rejection moot. The subject matter of claim 1 has been incorporated into claim 19.

Claim 23 is allowable as depending from claim 19 and, further, because Oles does not appear to describe “wherein the another region rich in catalyzing material itself comprises *a plurality of layers rich in catalyzing material, which layers rich in catalyzing material differ in*

*at least one of average particle size and chemical composition.”* (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claims 24 through 26 are each allowable as depending from claim 19.

Anticipation Rejection Based on U.S. Patent No. 6,601,662 to Matthias et al.

Claims 1 through 3, 6 through 8, 10 through 13, 15 through 20, 22 through 31, and 33 through 36 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Matthias et al. (U.S. Patent No. 6,601,662). Applicant respectfully traverses this rejection, as hereinafter set forth. The 35 U.S.C. § 102(e) anticipation rejection of claims 1 through 26 is improper because Matthias et al. fails to describe each and every element as set forth in the claims arranged in the same way as recited in the claims.

As to claim 1 in its previous form and as amended herein, Applicant respectfully asserts that Matthias does not, in fact, describe each and every element thereof. Applicant has carefully considered the Examiner’s interpretation of Matthias in the Final Office Action and, while not agreeing with same, has amended claim 1 in the interest of advancing prosecution. Applicant has amended claim 1 to recite, in pertinent part, “[a] polycrystalline diamond ~~abrasive element layer~~ having consisting of a region rich in catalyzing material and ~~an annular~~ a region lean in catalyzing material, the region lean in catalyzing material including an annular portion adjacent to and extending along the peripheral surface ~~extending~~ away from the working surface toward but stopping short of the interface, the annular ~~region portion or a substantial portion thereof being located bounded~~ between at least a portion of the region rich in catalyzing material and the peripheral surface ~~and being lean in catalyzing material~~.”

The regions 30 and 70 designated by the Examiner respectively comprise a diamond table in its entirety (30, see Col. 16, lines 7-12) and a working surface (70, see Col. 16, lines 15 and 16). Neither FIGS. 19A and B nor FIGS. 20A and B depict a polycrystalline diamond layer consisting of a region rich in catalyzing material and a region lean in catalyzing material including an annular, or ring-shaped, portion bounded between a portion of the region rich in catalyzing material and the peripheral surface of the polycrystalline diamond layer. As may

readily be appreciated from these drawing figures and the accompanying text at Col. 17, lines 37-45, there are no *annular* regions in either of these depicted elements whatsoever, either lean in catalyzing material or not.

Applicant appreciates Exhibit B to the outstanding Final Office Action, and has amended claim 1 in view thereof and of the Examiner's comments.

Claim 2 is allowable as depending from claim 1. Claim 2 has been amended to recite that a portion of the catalyst-lean region is adjacent to the working surface.

Claim 3 is allowable as depending from claim 1.

Claim 6 has been amended to depend from claim 1, and is allowable as depending therefrom.

Claim 7 is allowable as depending from claim 1 and, further, as Matthias does not appear to describe "wherein the region rich in catalyzing material comprises *a plurality of layers, which layers differ in average particle size or composition.*" (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claim 8 is allowable as depending from claim 1.

Claim 9 is allowable as depending from claim 1.

Claim 10 is allowable as depending from claim 1.

Claim 11 is allowable for reasons similar to those stated above with respect to claim 1. Again, the Matthias reference as relied upon by the Examiner fails to describe "[a] polycrystalline diamond abrasive element~~layer~~ having a consisting of at least one substantially annular-region lean in catalyzing material, the at least one region being substantially annular in shape, adjacent the peripheral surface, commencing at a peripheral edge of the working surface and extending away from the working surface toward the interface but spaced therefrom, and at least another region of the polycrystalline diamond layer being rich in catalyzing material."

Claim 12 is allowable as depending from claim 11.

Claim 15 is allowable as depending from claim 11 and, further, because Matthias fails to describe "wherein the at least another region rich in catalyzing material itself comprises *a plurality of layers rich in catalyzing material, which layers rich in catalyzing material differ in*

*at least one of average particle size and chemical composition.”* (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claims 16 through 18 are each allowable as depending from claim 11.

Claim 19 is allowable as Matthias does not appear, for the reasons stated above with respect to claim 1, to describe “[a] polycrystalline diamond ~~abrasive element~~layer having consisting of a region lean in catalyzing material adjacent at least a portion of the working surface, lean in catalyzing material and a another, substantially annular region lean in catalyzing material adjacent the peripheral surface, contiguous with the region, extending away from the working surface toward the interface and spaced from the interface, and a region rich in catalyzing material in contact with the substrate along the interface and including a portion located between the another, substantially annular region lean in catalyzing material and the interface.”

Claim 20 is allowable as depending from claim 19.

Claim 22 has been canceled, rendering the rejection moot. The subject matter of claim 1 has been incorporated into claim 19.

Claim 23 is allowable as depending from claim 19 and, further, because Matthias does not appear to describe “wherein the another region rich in catalyzing material itself comprises *a plurality of layers rich in catalyzing material, which layers rich in catalyzing material differ in at least one of average particle size and chemical composition.”* (emphasis added) Support for the amendment to claim 7 resides at least in paragraphs [0022] and [0044] of the published application.

Claims 24 through 26 are each allowable as depending from claim 19.

Claim 27 is allowable as Matthias does not appear, for the reasons stated above with respect to claim 1, to describe “[a] polycrystalline diamond ~~abrasive element~~layer having consisting of at least one region rich in catalyzing material and a substantially annular at least one region lean in catalyzing material adjacent the peripheral surface, substantially annular in configuration and extending from adjacent to the the working surface toward the interface, the at least one substantially annular region lean in catalyzing material located between a portion of the

at least one region rich in catalyzing material and the peripheral surface, another portion of the at least one region rich in catalyzing material being located adjacent the peripheral surface and between the at least one substantially annular region lean in catalyzing material and the interface.

Claims 28 through 31 are allowable as depending from claim 27.

Claim 33 is allowable as depending from claim 27.

Claim 34 is allowable as depending from claim 27 and, further, because Matthias fails to describe “wherein the at least one region rich in catalyzing material comprises *a plurality of layers, which layers differ in average particle size or chemical composition.*” (emphasis added) Support for the amendment to claim 34 resides at least in paragraphs [0022] and [0044] of the published application.

Claims 34 and 36 are allowable as depending from claim 27.

### 35 U.S.C. § 103(a) Obviousness Rejections

#### Obviousness Rejection Based on U.S. Patent No. 6,601,662 to Matthias et al.

Claims 4, 14, 21 and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Matthias et al. (U.S. Patent No. 6,601,662). Applicant respectfully traverses this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations.** *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, the Examiner must determine whether there is “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Further, rejections on obviousness grounds “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id* at 1741, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common

knowledge, or the nature of the problem itself, and not based on the Applicant's disclosure.

*DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

The 35 U.S.C. § 103(a) obviousness rejection of claims 4, 14 and 21 is improper because Matthias et al. fails to describe "wherein the annular region extends from the working surface toward the interface *to a depth of at least half the overall thickness of the polycrystalline diamond layer, but stops short of the interface by at least about 500µm.*" (emphasis added), as recited in each of claims 4, 14 and 21. It appears that the Examiner may still be misreading the claim language, which does not require a catalyst-rich region of a least 500 micrometers but, rather, that the claimed annular region (at least a portion being lean in catalyzing material) extends *along the peripheral surface* of the polycrystalline diamond layer toward the interface between the polycrystalline diamond layer and the substrate 1) at least half the thickness of the diamond layer *but* 2) stops short of the interface by at least about 500 µm (500 micrometers). Applicant does not understand the Examiner's stated rationale for obviousness, based on the abrasiveness of the formation being drilled. In the abstract, a teaching of a catalyst-rich region of at least 150 micrometers thickness does not, to Applicant, appear to render obvious a portion of a catalyst-rich region of at least about 500 micrometers thickness on the peripheral surface of the polycrystalline diamond layer between the annular region lean in catalyst and the substrate.

Further, the nonobviousness of independent claims 1, 11 and 19 precludes a rejection of claims 4, 14 and 21 which respectively depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. See *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, the Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection of claims 4, 14 and 21.

Obviousness Rejection Based on U.S. Patent No. 6,344,149 to Oles in View of U.S. Patent No. 6,601,662 to Matthias et al.

Claims 3, 4, 13, 14, 21, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Oles (U.S. Patent No. 6,344,149) in view of Matthias et al. (U.S. Patent No. 6,601,662). Applicant respectfully traverses this rejection, as hereinafter set forth.

For the reasons stated in Applicant's last response and as reiterated below, claim 3 is allowable as depending from claim 1 and, further, as Oles in view of Matthias et al. does not appear to teach or suggest an annular region or portion thereof lean in catalyzing material and extending into the polycrystalline diamond from the peripheral surface a depth of about 30  $\mu\text{m}$  to about 500  $\mu\text{m}$ . Oles admittedly fails to disclose a precise depth of a region of a polycrystalline diamond compact which is lean in catalyzing material. The claim requires a depth for the claimed *annular* region or portion thereof lean in catalyzing material extending into the polycrystalline diamond *from the peripheral surface* (e.g., from the side of the diamond layer) a depth of from about 30  $\mu\text{m}$  to about 500  $\mu\text{m}$ . Matthias et al. teaches a region lean in catalyzing material of about 100 micrometers depth. However, Matthias does not appear to teach or suggest an annular region as presently claimed which is lean in catalyzing material. Oles teaches a very brief time for removing catalyst from an exterior region of his diamond layer (Col. 5, lines 45 through 54) and a very thin depth from which the catalyst has been removed (*see, e.g.*, Claim 19 reciting an exterior region thickness of between 10 and 15 microns). The purpose of removing catalyst in Oles is to provide for infiltration of CVD-applied diamond between diamond particles where the catalyst has been removed so as to provide a specially made, roughened surface for material cutting (Col. 2, lines 1 through 15, Col. 6, line 67 though Col. 7, line 20). Matthias et al. removes catalyst to a depth of at least 100 micrometers to enhance the thermal stability of the surface of the diamond table. Thus, there is no reason to remove catalyst from the diamond table of Oles to any depth as disclosed by Matthias, as the depths employed by Matthias are for a different purpose than the depth of Oles and would not serve to enhance receipt of CVD diamond between diamond particles significantly below the surface of the polycrystalline diamond layer.

Claims 4, 14, 21 and 32 are each allowable as respectively depending from claim 1, 11, 19 and 27 and, because the combination of Oles and Matthias et al. fails to teach or suggest

“wherein the annular region extends from the working surface toward the interface *to a depth of at least half the overall thickness of the polycrystalline diamond layer, but stops short of the interface by at least about 500µm.*” (emphasis added), as recited in each of claims 4, 14, 21 and 32. It is apparent, as noted above in the context of another rejection, that the Examiner may be misreading the claim language, which does not require a catalyst-rich region of a least 500 micrometers but, rather, that the claimed annular region (at least a portion being lean in catalyzing material) extends toward the interface between the polycrystalline diamond layer and the substrate 1) at least half the thickness of the diamond layer *but* 2) stops short of the interface by at least about 500 µm (500 micrometers). Oles fails to teach or suggest an annular, catalyst-lean region. To the extent Oles teaches a catalyst-lean region extending from a working surface toward an interface with a substrate, Oles teaches only extending the region to the interface. Thus, not only does the region not stop short of the interface by at least about 500 µm, but it does not stop short at all. Matthias does not cure this deficiency. As noted above, a teaching in Matthias of a catalyst-rich region of at least 150 micrometers thickness does not, to Applicant, appear to render obvious a portion of a catalyst-rich region of at least about 500 micrometers thickness on the peripheral surface of the polycrystalline diamond layer between the annular region lean in catalyst and the substrate.

Obviousness Rejection Based on U.S. Patent No. 6,344,149 to Oles in View of U.S. Patent No. 6,202,770 to Jurewicz et al.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Oles (U.S. Patent No. 6,344,149) in view of Jurewicz et al. (U.S. Patent No. 6,202,770). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 9 is allowable as depending from claim 1 as amended herein.

Obviousness Rejection Based on U.S. Patent No. 6,601,662 to Matthias et al. in View of U.S. Patent No. 6,202,770 to Jurewicz et al.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Matthias et al. (U.S. Patent No. 6,601,662) in view of Jurewicz et al. (U.S. Patent No. 6,202,770). Applicant respectfully traverses this rejection, as hereinafter set forth.

Claim 9 is allowable as depending from claim 1 as amended herein.

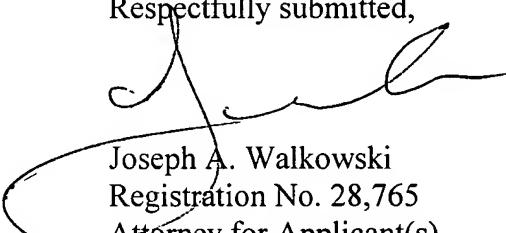
### ENTRY OF AMENDMENTS

The proposed amendments to claims 1 through 4, 7, 11, 12, 14, 15, 19, 21, 23, 27-32 and 34 and the addition of new claims 36 and 37 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

### CONCLUSION

Claims 1 through 4, 6 through 21 and 23 through 36 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,



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